One size cloaks all

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A metamaterial invisibility cloak that can adapt to hide different sized objects is demonstrated by in *Nature Communications* this week. The findings represent a useful advance for more practical applications of metamaterial cloaking. The research is led by Yonsei University, Korea.

Metamaterials have already been shown to hide objects from electromagnetic waves by manipulating the light so that it appears to have not interacted with anything. However, these cloaks need to be redesigned and rebuilt if the shape of the object changes.

Kyoungsik Kim and colleagues now present a smart metamaterial that is able to adapt to changes in the object shape, so that a range of objects may be hidden by one cloak. The cloak is based on elastic materials, which enable it to deform around the object. At the same, the deformation alters its properties to maintain invisibility. The team build and demonstrate cloaks for objects whose height varies over around 10mm, using microwave frequency light incident for a range of angles. They report that the object remains well hidden in all cases.

These smart metamaterial cloaks provide a new avenue to explore adaptable, real-world applications of cloaking that are not limited by the objects they hide.

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